

DOE/RL- 88- 21

300 Area Waste Acid Treatment System

Rev. 5, 9/26/96

Please print or type in the unshaded areas only  
(fill-in areas are spaced for elite type, i.e. 12 character/inch).

<b>FORM</b> <b>3</b>	<b>DANGEROUS WASTE PERMIT APPLICATION</b>	I. EPA/STATE I.D. NUMBER <table border="1" style="width: 100%; border-collapse: collapse;"><tr><td>W</td><td>A</td><td>7</td><td>8</td><td>9</td><td>0</td><td>0</td><td>0</td><td>8</td><td>9</td><td>6</td><td>7</td></tr></table>	W	A	7	8	9	0	0	0	8	9	6	7
W	A	7	8	9	0	0	0	8	9	6	7			
FOR OFFICIAL USE ONLY														
APPLICATION APPROVED	DATE RECEIVED (mo., day, & yr.)	COMMENTS												
		<b>Pending Approval</b>												
<b>II. FIRST OR REVISED APPLICATION</b>														
<p>Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I above.</p>														
<div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p><b>A. FIRST APPLICATION</b> (place an "X" below and provide the appropriate date)</p><div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p><input type="checkbox"/> 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete Item below.)</p><table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%;">MO.</td><td style="width: 33%;">DAY</td><td style="width: 33%;">YEAR</td></tr><tr><td>03</td><td>22</td><td>1943</td></tr></table><p><i>*FOR EXISTING FACILITIES, PROVIDE THE DATE (mo., day, &amp; yr.) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)</i></p><p><i>*The date construction of the Hanford Facility commenced.</i></p></div><div style="width: 48%;"><p><input type="checkbox"/> 2. NEW FACILITY (Complete item below)</p><table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 33%;">MO.</td><td style="width: 33%;">DAY</td><td style="width: 33%;">YEAR</td></tr><tr><td> </td><td> </td><td> </td></tr></table><p>FOR NEW FACILITIES, PROVIDE THE DATE, (mo., day, &amp; yr.) OPERATION BEGAN OR IS EXPECTED TO BEGIN</p></div></div></div><div style="width: 48%;"><p><b>B. REVISED APPLICATION</b> (place an "X" below and complete Section I above)</p><div style="display: flex; justify-content: space-between;"><div style="width: 48%;"><p><input checked="" type="checkbox"/> 1. FACILITY HAS AN INTERIM STATUS PERMIT</p></div><div style="width: 48%;"><p><input checked="" type="checkbox"/> 2. FACILITY HAS A FINAL PERMIT</p></div></div></div></div>			MO.	DAY	YEAR	03	22	1943	MO.	DAY	YEAR			
MO.	DAY	YEAR												
03	22	1943												
MO.	DAY	YEAR												
<b>III. PROCESS - CODES AND CAPACITIES</b>														
<p><b>A. PROCESS CODE</b> - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).</p>														
<p><b>B. PROCESS DESIGN CAPACITY</b> - For each code entered in column A enter the capacity of the process.</p>														
<p>1. AMOUNT - Enter the amount.</p>														
<p>2. UNIT OF MEASURE - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.</p>														
	PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY		PRO- CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY									
<b>Storage:</b>			<b>Treatment:</b>											
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY									
TANK	S02	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY									
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS	INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR									
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS												
<b>Disposal:</b>														
INJECTION WELL	D80	GALLONS OR LITERS	OTHER (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided: Section III-C.)	T04	GALLONS PER DAY OR LITERS PER DAY									
LANDFILL	D81	ACRE-FEET (the volume that would cover one acre to a depth of one foot) OR HECTARE-METER												
LAND APPLICATION	D82	ACRES OR HECTARES												
OCEAN DISPOSAL	D83	GALLONS PER DAY OR LITERS PER DAY												
SURFACE IMPOUNDMENT	D84	GALLONS OR LITERS												
UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE	UNIT OF MEASURE	UNIT OF MEASURE CODE									
GALLONS	G	LITERS PER DAY	V	ACRE-FEET	A									
LITERS	L	TONS PER HOUR	D	HECTARE-METER	F									
CUBIC YARDS	Y	METRIC TONS PER HOUR	W	ACRES	B									
CUBIC METERS	C	GALLONS PER HOUR	E	HECTARES	Q									
GALLONS PER DAY	U	LITERS PER HOUR	H											
<b>EXAMPLE FOR COMPLETING SECTION III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks; one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.</b>														
A. PROCESS		B. PROCESS DESIGN CAPACITY												

LINE NUMBER	CODE (from list above)	1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY			
X-1	S02	600	G				
X-2	T03	20	E				
1							
300 Area Waste Acid Treatment System							
2	T01	14,006	V				
3	S02	16,505	L				
4	T04	15,898	V				
5							
311 Tanks							
6	T01	18,927	V				
7	S02	34,069	L				
8							
9							
10							

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESS (CODE "T04"). FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

T01, S02, T04 - The 300 Area Waste Acid Treatment System (300 WATS) and

Tank 40 began waste management operations in April 1973; auxiliary equipment and centrifuge operations began in November 1995. The 300 WATS was used for the treatment and storage of mixed waste generated during fuel fabrication operations in the 300 Area. The 300 WATS also was used for disposing of used and/or unneeded chemicals for other Hanford Facility operations. A portion of the waste initially was treated in two tanks (tanks 7 and 11) in the 333 Building to reduce the chromium (VI) to chromium (III). From May 1983 to January 1987, tanks 7 and 11 were used twice a year to treat up to 757 liters (200 gallons) per day of waste (T01). This waste, along with all other waste acid generated in the 333 Building, was drained to the 334-A Building and stored in two storage tanks (tanks Band C) (S02), with a combined volume of 15,142 liters (4,000 gallons). Previously, waste entered the 334-A Building passing through a settling tank [tank A, volume 1,363 liters (360 gallons)] before entering tanks B and C. Tank A ceased receiving waste in August 1984 when piping was disconnected to the tank and waste was routed directly to tanks B and C. Tank A was cleaned out and the polyvinyl chloride liner removed in 1988.

From startup in April 1973 until August 1973, the waste acid from the 333 Building was collected in a plastic-lined steel underground 14,385 liter (3,800 gallon) tank and a plastic-lined steel aboveground 22,712 liter (6,000 gallon) tank (tank 4) in the 334 Tank Farm. At that time, the underground tank developed a leak and was removed from service. The 334-A Building storage tanks replaced this underground tank in December 1974. Tank 4 was retained for emergency storage when the 313 Building neutralization activities were down for maintenance or modifications. Tank 4 usually was empty and when the tank was filled in January 1986, a leak developed near the top of the tank. Tank 4 was emptied and abandoned at that time. Tank 4 was removed, cleaned, and disposed of onsite in 1988.

The waste acid was pumped from the 334-A Building to the 313 Building where the waste acid underwent pH adjustment in a waste acid neutralization tank (tank 2) (T01). Tank 2 was capable of treating a maximum of 13,249 liters (3,500 gallons) per day of waste acid. The waste acid was pumped from tank 2 to tank 11 and then to a centrifuge where the waste acid underwent further treatment to separate the liquid and solid phases (T04). A maximum of 11,356 liters (3,000 gallons) of waste acid per day could be treated in the centrifuge. The solid waste from the centrifuge was collected in containers and transferred to the 303-K Storage Unit. The liquid effluent was pumped from the centrifuge to tank 5 and to a filter press for additional treatment to remove fine solids (T04), which remained following treatment in the centrifuge. The filter press treated a maximum of 4,542 liters (1,200 gallons) per day. Solids collected in the filter press were sent to the uranium recovery system or to the 303-K Storage Unit. The filtered liquid effluent was drained into effluent collection tanks (tanks 9 and 10), where the liquid effluent was stored temporarily before being pumped to the 311 Tank Farm.

T01, S02 - The 311 Tank Farm was used for storage of treated liquid effluents from both the 300 WATS and the uranium recovery process. Storage occurred in two tanks (tanks 40 and 50) with capacities of 15,142 and 18,927 liters (4,000 and 5,000 gallons), respectively. Tanks 40 and 50 are constructed of stainless steel. Tank 50, the 18,927 liter (5,000 gallon) tank, occasionally was used for decanting waste when the centrifuge in the 313 Building was down for maintenance. Tank 50 was capable of treating up to 18,927 liters (5,000 gallons) per day, but only was used occasionally for decanting waste (a total of five times between January 1986 and December 1987).

Auxiliary equipment (two pumps, two cartridge filters, and two sample ports) are housed in the adjacent 303-F Building. Auxiliary equipment was used to filter solutions and to recirculate the solutions between various tanks and the 313 Building for reprocessing.

## IV. DESCRIPTION OF DANGEROUS WASTES

A. **DANGEROUS WASTE NUMBER** - Enter the four digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four digit number(s) that describe the characteristics and/or the toxic contaminants of those dangerous wastes.

B. **ESTIMATED ANNUAL QUANTITY** - For each listed waste entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** - For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE CODE	METRIC UNIT OF MEASURE CODE
P POUNDS	K KILOGRAMS
T TONS	M METRIC TONS

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

## D. PROCESSES

## 1. PROCESS CODES:

For listed dangerous waste: For each listed dangerous waste entered in column A select the code(s) from the list of process codes contained in Section III to indicate how the waste will be stored, treated, and/or disposed of at the facility.

For non-listed dangerous wastes: For each characteristic or toxic contaminant entered in Column A, select the code(s) from the list of process codes contained in Section III to indicate all the processes that will be used to store, treat, and/or dispose of all the non-listed dangerous wastes that possess that characteristic or toxic contaminant.

Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code(s).

## 2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: DANGEROUS WASTES DESCRIBED BY MORE THAN ONE DANGEROUS WASTE NUMBER - Dangerous wastes that can be described by more than one Waste Number shall be described on the form as follows:

1. Select one of the Dangerous Waste Numbers and enter it in column A. On the same line complete columns B, C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.

2. In column A of the next line enter the other Dangerous Waste Number that can be used to describe the waste. In column D(2) on that line enter "Included with above" and make no other entries on that line.

3. Repeat step 2 for each other Dangerous Waste Number that can be used to describe the dangerous waste.

EXAMPLE FOR COMPLETING SECTION IV (shown in line numbers X-1, X-2, X-3, and X-4 below) - A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non-listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

L I N E .	A. DANGEROUS  WASTE NO.  <i>(enter code)</i>	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT  OF MEA- SURE  <i>(enter code)</i>	D. PROCESSES				
	1. PROCESS CODES <i>(enter)</i>				2. PROCESS DESCRIPTION <i>(if a code is not entered in D(1))</i>			
X-1	K054	900	P	T03	D80			
X-2	D002	400	P	T03	D80			
X-3	D001	100	P	T03	D80			
X-4	D002			T03	D80			included with above
1								
300 Area Waste Acid Treatment System								
2	D001	2,086,525	K	T01	S02	T04		Tank-Treatment/Tank -Storage/Treatment-Other (Phase Separation)
3	D002		↓	↓	↓	↓		↓
4	WT02		↓	↓	↓	↓		↓
5	D004		↓	↓	↓	↓		↓
6	D005		↓	↓	↓	↓		↓
7	D006		↓	↓	↓	↓		↓
8	D007		↓	↓	↓	↓		↓
9	D008		↓	↓	↓	↓		↓
10	D009		↓	↓	↓	↓		Included With Above
11	D007	907	K	T01				Treatment-Tank (chemical treatment)

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM SECTION D(1) ON PAGE 3.

The 300 WATS was used to treat both mixed and dangerous waste from fuels fabrication operations in the 333 Building and from nonroutine waste additions. Treatment was performed to make the waste more amenable for further treatment and for storage. The 333 Building waste primarily consisted of hydrofluoric acid, nitric acid, sulfuric acid, and copper nitrate. These routine waste types exhibited the dangerous waste characteristics of ignitability (D001) and corrosivity (D002) as the nitric acid is considered an oxidizer in accordance with Washington Administrative Code 173 - 303. Routine waste also was considered a state-only, toxic, dangerous waste (WT02). Additionally, some of the routine waste was designated characteristic waste due to chromium (D007). Nonroutine waste added to the system included characteristic waste due to arsenic (D004), barium (D005), cadmium (D006), lead (D008), and mercury (D009). Approximately 2,086,525 kilograms (4,600,000 pounds) of waste were treated and stored yearly in this system. Approximately 907 kilograms (2,000 pounds) of waste (D007, chromium VI to chromium III) were treated per year.

The 311 tank system was used for the treatment and storage of waste. This waste was effluent from the waste acid treatment and uranium recovery process. This waste, depending on the variations in the treatment process, was considered mixed waste due to toxicity (WT02). Routine and nonroutine waste added to the waste acid treatment system included characteristic waste due to arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), and mercury (D009). The waste frequently had a pH greater than 12.5, which exhibits the dangerous waste characteristic of corrosivity (D002). Approximately 2,086,525 kilograms (4,600,000 pounds) of waste were treated and stored per year in the 311 tanks.

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

All existing facilities must include photographs (*aerial or ground-level*) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (*see instructions for more detail*).

LATITUDE ( <i>degrees, minutes, &amp; seconds</i> )					LONGITUDE ( <i>degrees, minutes, &amp; seconds</i> )				

<b>VIII. FACILITY OWNER</b>			
<input checked="" type="checkbox"/> A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.			
<input type="checkbox"/> B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following items:			
1. NAME OF FACILITY'S LEGAL OWNER			2. PHONE NO. (area code & no.)
3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
<b>IX. OWNER CERTIFICATION</b>			
<i>I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.</i>			
NAME (print or type)	SIGNATURE	DATE SIGNED	
John D. Wagoner, Manager U.S. Department of Energy Richland Operations Office	John D. Wagoner	09/26/1996	
<b>X. OPERATOR CERTIFICATION</b>			
<i>I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.</i>			
NAME (print or type)	SIGNATURE	DATE SIGNED	
SEE ATTACHMENT			

*X. OPERATOR CERTIFICATION*

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

John D. Wagoner  
Owner/Operator  
John D. Wagoner, Manager  
U.S. Department of Energy  
Richland Operations Office

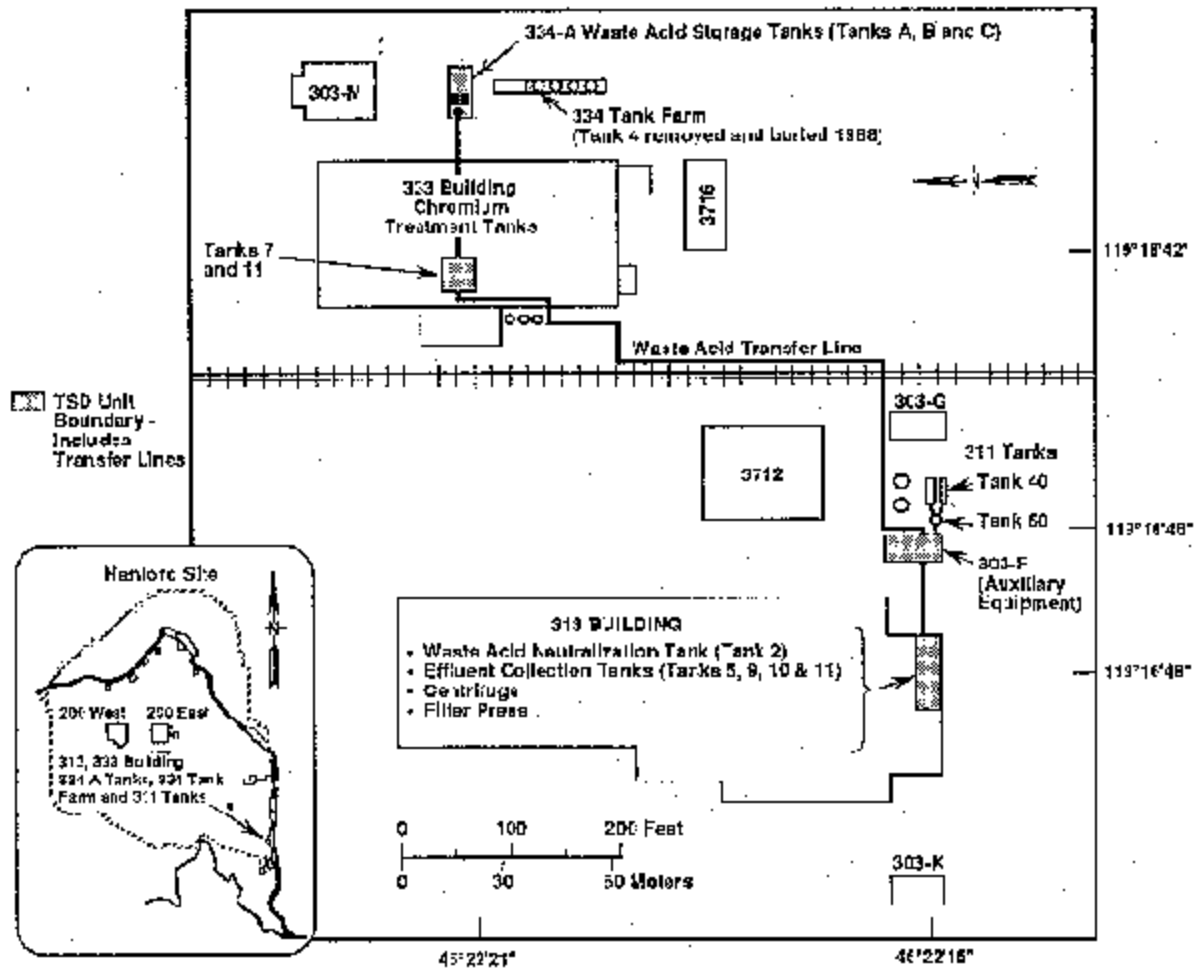
9/26/96  
Date

H.J Hatch  
Co-Operator  
H. J. Hatch  
President and Chief Executive Officer  
Fluor Daniel Hanford, Inc.

9/13/96  
Date

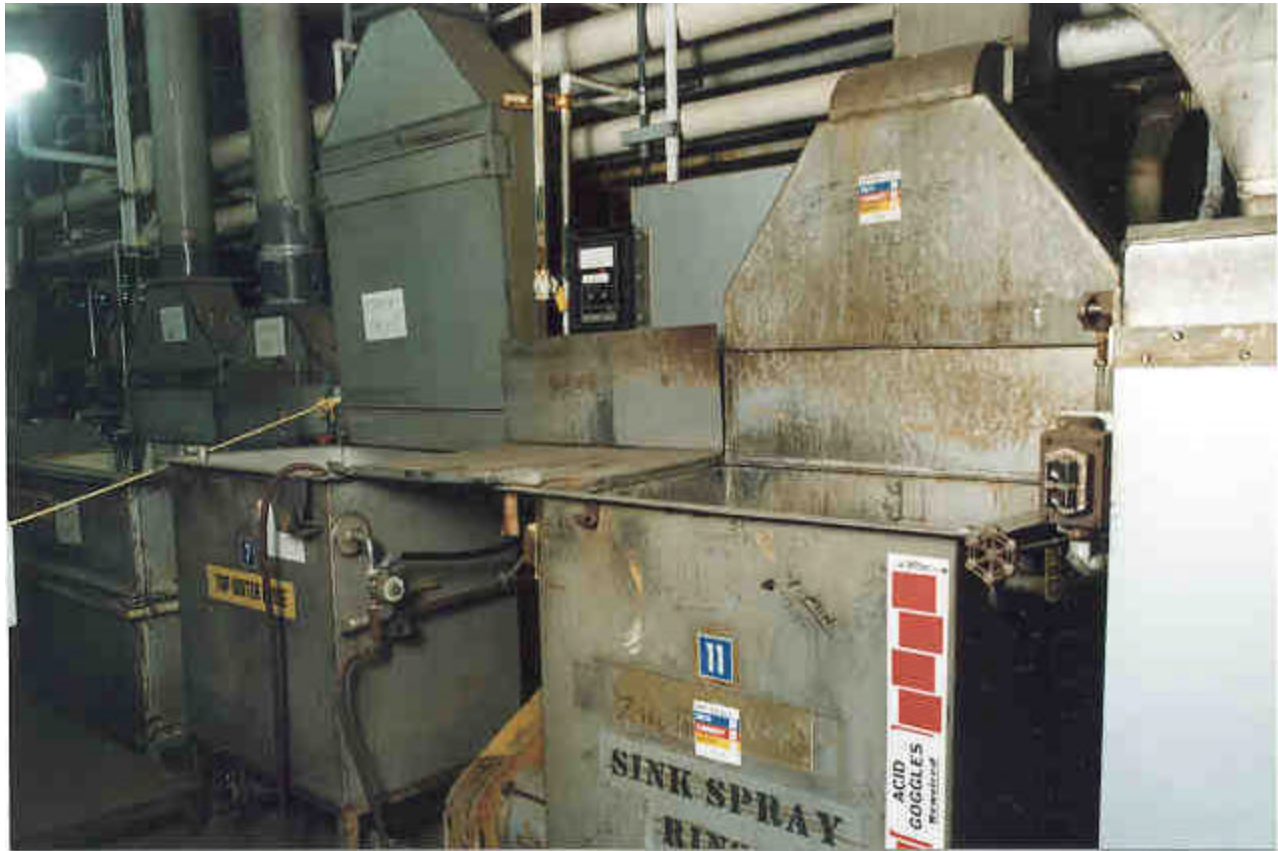
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## 300 Area Waste Acid Treatment System



H9509015.1

## 300 AREA WASTE ACID TREATMENT SYSTEM – 333 BUILDING



TANKS 7 AND 11 -- CHROMIUM (IV) REDUCTION

46°22'21"

119°16'42"

95080690-2CN  
(PHOTO TAKEN 1995)



## 300 AREA WASTE ACID TREATMENT SYSTEM – 334-A BUILDING



46°22'21"  
119°16'42"

95080690-12CN  
(PHOTO TAKEN 1995)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 334-A WASTE ACID STORAGE TANKS



TANKS A, B, AND C  
(TANK A TAKEN OUT OF SERVICE IN 1988)

46°22'21"  
119°16'42"

95080690-22CN  
(PHOTO TAKEN 1995)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 334 TANK FARM



**WASTE ACID TANK 4  
(REMOVED, CLEANED, AND BURIED IN 1988)**

**46°22'21"  
119°16'42"**

**8306387-6CN  
(PHOTO TAKEN 1983)**



## 300 AREA WASTE ACID TREATMENT SYSTEM – 313 BUILDING WASTE ACID NEUTRALIZATION TANK



TANK 2

46°22'16"  
119°16'48"

8704479-6CN  
(PHOTO TAKEN 1987)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 313 BUILDING



**TANK 5**

**46°22'16"**  
**119°16'48"**

95080690-26CN  
(PHOTO TAKEN 1995)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 313 BUILDING



**FILTER PRESS**

**46°22'16"**

**119°16'48"**

7510170-19CN  
(PHOTO TAKEN 1975)



## 300 AREA WASTE ACID TREATMENT SYSTEM – 313 BUILDING



**CENTRIFUGE WITH LIQUID RECEIVING TANK 11**

46°22'16"  
119°16'48"

90022759-5CN  
(PHOTO TAKEN 1990)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 313 BUILDING



TANKS 9 AND 10 -- EFFLUENT COLLECTION TANKS

46°22'16"  
119°16'48"

90022759-7CN  
(PHOTO TAKEN 1990)



## **300 AREA WASTE ACID TREATMENT SYSTEM – 311 TANK FARM**



**TANKS 40 AND 50**  
**46°22'16"**  
**119°16'46"**

85050353-9CN  
(PHOTO TAKEN 1985)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 303-F BUILDING



46°22'16"  
119°16'46"

89050353-8CN  
(PHOTO TAKEN 1989)

## 300 AREA WASTE ACID TREATMENT SYSTEM – 303-F BUILDING



AUXILIARY EQUIPMENT (PUMPS, FILTERS, AND SAMPLE PORTS)

46°22'16"

119°16'46"

89050353-7CN  
(PHOTO TAKEN 1989)